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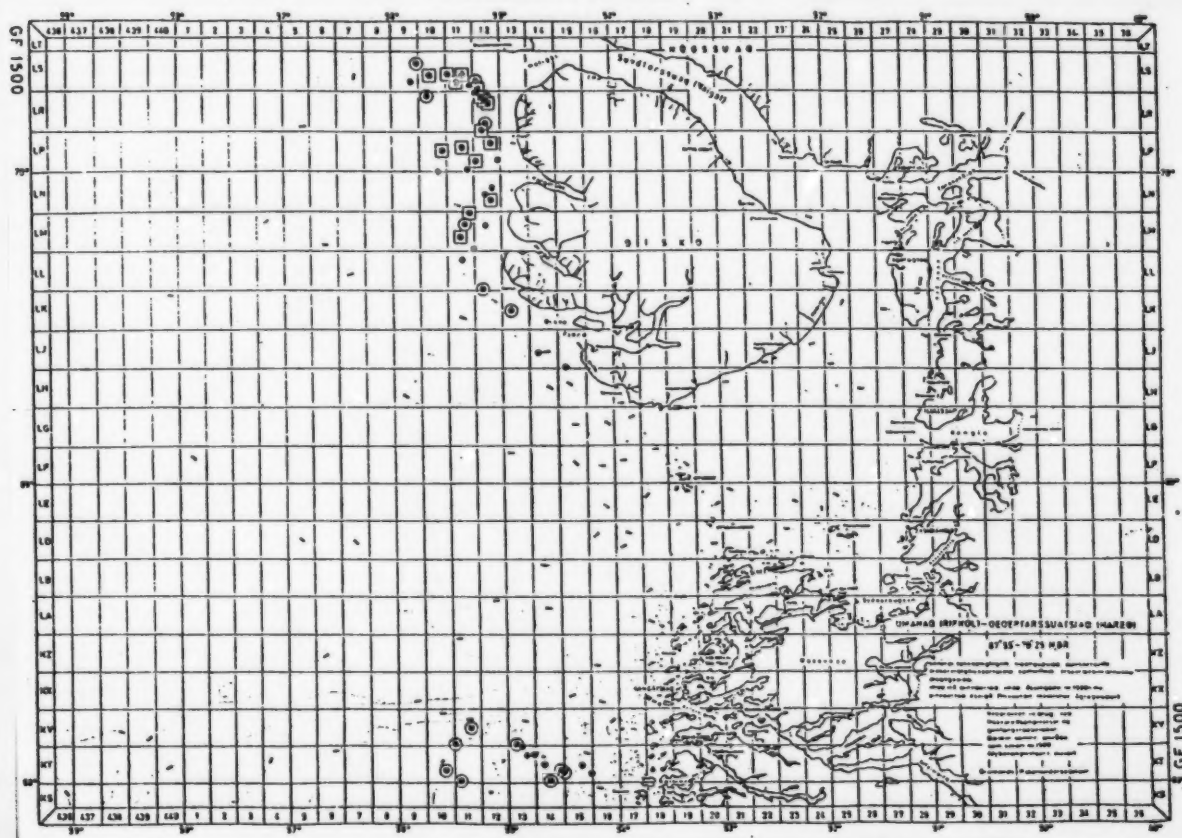
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Soren Anker Pedersen :

THE ICELANDIC SCALLOP OFF WESTERN GREENLAND

Trial fishery for the Icelandic scallop at the western
Greenlandic banks



The Greenland Institute of Fisheries and Environment Research
Tagensvej 135, 1. sal
2200 Copenhagen N, February 1987

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1. Introduction

Towards the end of 1983, a commercial Icelandic scallop (Chlamys islandica) fishery was started in western Greenland. In the beginning, the fishery centered on the Icelandic scallop beds in the sheltered waters off Nuuk, Nanortalik, and Paamiut. Later, the fishery became to include also similar scallop beds off Fiskenaesset and N and S of Maniitsoq.

Interest in Icelandic scallop fishery has increased strongly in the past few years. This has resulted i.a. in an increase in the number of permits issued for vessels wishing to fish for the Icelandic scallop. In the latter half of 1986, it became possible to sell live Icelandic scallop to the onshore mechanized production lines of fishery plants in Maniitsoq and Nuuk.

Parallely with this development, Greenland Home Rule introduced projects aiming to chart and assess the size and optimal exploitation of Greenland's Icelandic scallop resources.

Norway established, in 1985 and 1986, quite an extensive fishery for the Icelandic scallop in the Barents Sea. The fishery takes place on the Icelandic scallop beds in the open waters around Bear Island, Svalbard, and Jan Mayen. In 1986, about 8 Icelandic scallop factory vessels were fishing 24 hours a day for scallops in the Barents Sea. Each vessel has up to 3 mechanized production lines onboard, and up to 40 t of live scallop is fished per day and vessel. The commercial Icelandic scallop stocks in the Barents Sea have been unofficially estimated to amount to about 380 000 t.

In view of the significant Icelandic scallop beds found in the Norwegian open waters, it was natural to look for scallop beds in the open waters at the western Greenlandic banks.

Trial fishery for the Icelandic scallop was carried out in 1986 with the GFM research vessel M/S ADOLF JENSEN and with a chartered Faroese vessel, M/S NORDHEIM.

The present report contains the results of these trials.

2. Materials and methods

2.1 Trial fishery

M/S ADOLF JENSEN

The trial fishery was carried out in the period June 1 - June 7, 1986.

The dredge was an Icelandic model with an opening of 240 x 27 mm (Fig. 1). The underside of the dredge bag was made of chained steel rings with a diameter of 75 mm, and the upper side consisted of nylon net with a mesh size of 120 mm. The underside of the bag was attached to an iron cable which scrapes the bottom.

It was attempted to keep the drag duration constant at about 15 minutes and the dredging speed similarly at 1.5 knots.

Dredging was undertaken at 15 stations. Stations dredged with ADOLF JENSEN are marked with a star in Figs. 3a and 3b.

After a catch was hoisted onboard, all live scallops were separated for height measurement. All scallops were then frozen for subsequent processing. The quantity of dead shells was estimated.

M/S NORDHEIM

The trial fishery was carried out in the period July 12 - August 10, 1986.

The dredge was an Icelandic model with an opening of 360 x 27 mm. This dredge was constructed with the same principle as the smaller one used in the trials carried out with ADOLF JENSEN (Fig. 1). The underside of the bag consisted of 55-mm steel rings and the upper side of 95-mm meshes.

The drag duration was about 30 min and the dredging speed 2.5 knots.

Dredgings were conducted at 184 stations. The stations dredged with NORDHEIM are marked in Figs. 3a, 3b and 3c with a dot.

During the fishery, the total catch was examined and assessed. The quantity

and size of live Icelandic scallops were estimated. Only a minor portion of the live scallops were subjected to height measurement and frozen for subsequent study. The quantity of shells from dead scallops was estimated.

2.2 Processing of material collected

In the laboratory, the scallops were measured, station by station, with respect to height, length, width, total wet weight, wet weight without fouling organisms, wet weight of body, muscle, and gonad. Height, length and width were measured with a slide caliper and rounded down to the nearest mm (see Fig. 2). Wet weight was measured with electronic scales to the nearest 0.1 gram.

The sexes can be distinguished by the color of the gonads. Individuals with orange or reddish gonads were determined to be females and those with pale or whitish gonads males.

Age was determined by the growth zones counted from the ligament (see Fig. 2) by the help of a binocular microscope. The method is described by Johannesen (1973).

3. Analyses of material

3.1 Distribution and density of Icelandic scallop

The expeditions undertaken with ADOLF JENSEN and NORDHEIM were organized with the purpose of carrying out fishery trials, and no systematic charting of the Icelandic scallop beds was performed.

The Appendix contains a survey of all dredging stations visited by M/S ADOLF JENSEN and M/S NORDHEIM. The survey and Figures 3a to 3c show that a very large majority of the drags were undertaken without catching any live scallops. Scallops were taken from depths ranging from 40 to 120 m, mostly however between 70 and 90 m. The best catches were taken in the area N of Disko (Fig. 3c), where both large and small Icelandic scallops were taken. The live scallops taken at the Store Hellefiskbanke were relatively small and spread along the edges of the

Bank. The quantities taken were very small, with only a few individuals per drag.

Figs. 4a and 4b and Table 1 indicate the stations where live scallops were collected for further analyses. Table 1 shows that very few and relatively small live scallops were taken at the edges of the Store Hellefiskbanke. More than 50 scallops were taken only on Station 94 (Field Code KK16). Thus, this station is responsible for more than a third of the material analyzed.

All the Icelandic scallops collected from the different stations were regarded as one population in the analyses.

3.2 Growth

Age determination is decisive for estimating the growth speed of the Icelandic scallop and thus also for estimating how big a portion of a population could be harvested.

The age determination of the Icelandic scallop is based on a dark and a light zone on the shell, which correspond to the yearly shell growth increments (Wiborg et al., 1974). Johannesen (1973) verified that growth zones form both on the shell and on the ligament, and he found that a dark winter zone was formed on the shell and the ligament in December - February. A counting of the dark winter zones yields the age of the scallop. In many cases it may be difficult, due to fouling organisms, to count the winter zones on the shell, and therefore, it is better to count them from the ligament.

Fig. 5 shows the age distribution of all Icelandic scallops taken at the Store Hellefiskbanke. It is seen that most of the scallops have 7 winter zones, and therefore, they are expected to belong to the 1978 year class. However, the Figure reveals nothing about the relative strength of year class, as the dredge has caught selectively the larger individuals. The younger and smaller scallops do not get caught as easily in the dredge, and this is most probably the reason why they are poorly represented in the catch.

Fig. 6 illustrates the relation between number of winter zones and shell height, for all individuals. The Figure shows that shell height at a given age is subject to a great variation. Thus, an Icelandic scallop with 7 winter zones can have a height ranging from about 30 mm to about 70 mm. This can be attributed to several circumstances :

- 1) Growth rate can vary with local conditions (The material consists of individuals taken in different localities and at different depths.)
- 2) Growth rate of scallops growing in the same locality may vary greatly.
- 3) Age determination may give uncertain results. The age of some individuals is difficult to determine owing to i.a. "false winter zones" which make their age seem higher than it is.

Von Bertalanffy's equation was used for a more technical growth description :

$$h_t = H_{\max} (1 - \exp(-K(t - t_0)))$$

where

- h_t = height of scallop at timepoint t
- $H_{\max}$ = maximum height
- K = speed at which height approaches maximum height
- t_0 = a constant

If the information presented in Fig. 6 is applied to the parameters in von Bertalanffy's equation ($H_{\max}$, K and t_0), it is found that the following formula can be used for denoting average shell height at a given age :

$$h_t = 94.4(1 - \exp(-0.094(t - 1.1)))$$

Fig. 6 shows the relation between shell height and age, based on this model.

3.3 Total weight

Fig. 7 illustrates the weight of the Icelandic scallop as a function of shell height. The relation between weight and height can be expressed as follows :

$$W = 0.00012 \times H^{3.02}$$

where

W = weight in gr

H = height in mm.

The scallops analyzed were on the whole without fouling organisms; only some of the largest individuals had some nap on their shells.

3.4 Muscle weight

Fig. 8 illustrates muscle weight as a function of height. The relation between muscle weight and height can be expressed as follows :

$$MW = 0.000028 \times H^{3.00}$$

where

MW = muscle weight in gr

H = height in mm.

Fig. 9 plots the yield, counted as muscle weight in % of total weight. It is seen that the average muscle yield of the Icelandic scallop is about 23 %. This is a high percentage, if compared with the normal yield percentages expected, which is attributed to the small size of the scallops and their lack of fouling organisms.

3.5 Gonad index

The relative size of the gonads can indicate whether the scallops have spawned or not. The Norwegian studies indicate that the gonad index rises before spawning, to drop sharply after it. The Icelandic scallop in Balsfjord at Tromsø spawn at the end of June. Skreslet (1973) found that in this locality the gonad index dropped from about 40 to 15 - 18 after spawning.

The following expression has been used for the gonad index :

$$(\text{gonad weight} / (\text{muscle weight} + \text{gonad weight})) \times 100$$

(See Wiborg et al., 1974).

Figs. 10a and 10b show the gonad indices for males and females taken at stations dredged with ADOLF JENSEN in the period June 1 to June 6, 1986.

The index lies at around 45 for both males and females bigger than about 40 mm. Therefore, these scallops had not spawned yet.

Similar values are shown by the gonad indices of males and females taken at the NORDHEIM stations (Fig. 4) in the period July 24 - 28; shown in Figs. 11a and 11b. The figures show that the female gonad indices seem to form two groups, one with high gonad indices and one with low. It is probable, that the scallops with the low indices (around 10) had spawned, while those with high indices had not. The males are more difficult to group, as their indices are more scattered in both June and July.

A more detailed examination of the material reveals that at the northernmost stations the catches included scallops with high gonad indices at the end of July, which means that they still had not spawned.

4. Conclusion

The results of the trial fishery show that there are no commercially exploitable Icelandic scallop resources at the western Greenlandic banks. Still, catches were good in the area NW of Disko (see Fig. 3c), and potential commercial resources may lie in this area.

In spite of the small size of the Icelandic scallops taken at the Store Hellefiskebanke the area seems to have good growth and living conditions, since most of the scallops had spawned by the end of July. It is possible that the Icelandic scallop is preparing to recolonize the banks after having been away for a number of years. There are significant amounts of large shells from dead scallops at several stations. (A number of these shells were sent to the laboratory for carbon¹⁴- dating. The results will be reported when available.)

It is recommended that the development of the presently sparse populations of the Icelandic scallop in the open waters be monitored. This can be done with a few drags at the stations which are now known to have scallops. Further, it is recommended that underwater photography be carried out to film the scallop beds for an assessment of bottom conditions and densities. The smallest scallops living at the dredged stations were

obviously not caught in the dredge because of the selectivity of the dredge, and it is very much possible that the densities of small scallops are essentially higher than indicated by the results of the trials.

5. References

Johannessen, O. H. 1973. Age determination in *Chlamys islandica* (O.F. Muller). *Astarte*, 6:15-20.

Skreslet, S. 1973. Spawning in *Chlamys islandica* (O.F. Muller) in relation to temperature variations caused by vernal meltwater discharge. *Astarte*, 6:9-14.

Wiborg, K.F.; Hansen, K. and Olsen, H.E. 1974. The Icelandic scallop (*Chlamys islandica* Muller) at Spitsbergen and Bear Island. Studies in 1973.

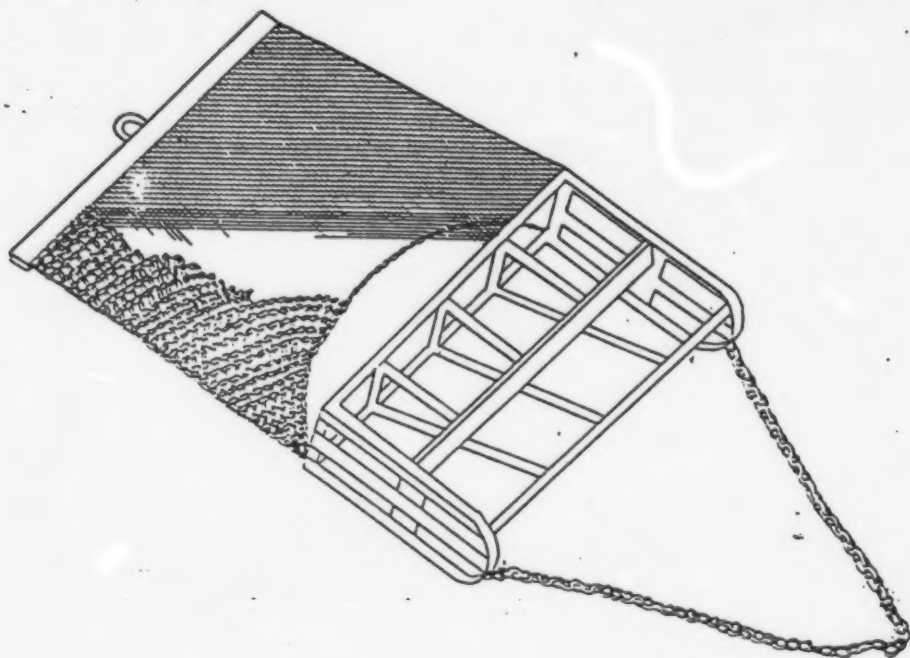
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"Adolf Jensen"

Station No. STNR	GFM Code GFM- KODE	Quantity N	Mean height/STD MIDDELHØJDE /STD	No. of growth zones ANTAL VEKSTZONER
28	KE-17	8	45,0/12,3	3-10
29	KE-17	6	48,2/6,6	4-11
32	KF-14	2	64,5/0,7	10-11
42	KH-16	2	54,0/22,6	7-8
43	KH-16	2	33,5/10,6	2-6
44	KJ-16	33	36,2/8,2	3-10
46	KK-17	9	47,3/9,4	3-9
50	KM-17	1	62,0/ -	9

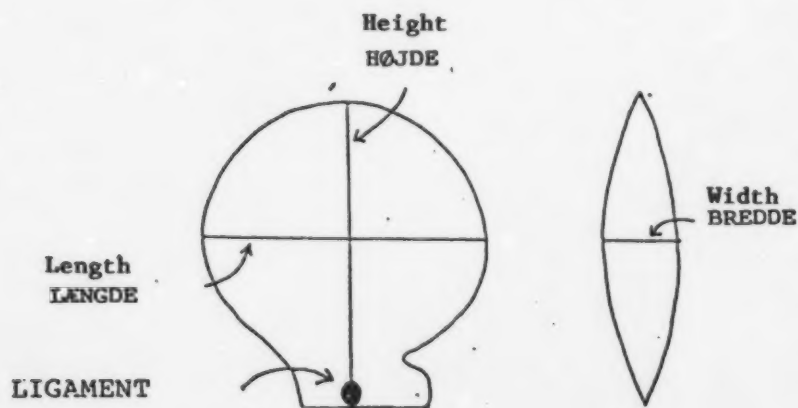
"Nordheim"

STNR	GFM- KODE	N	MIDDELHØJDE /STD	ANTAL VEKSTZONER
69	KS-11	2	58,0/26,9	3-11
70	KS-11	13	66,2/7,8	6-17
71	KS-10	4	70,3/5,5	11-12
72	KS-10	8	49,1/16,0	2-12
73	KT-10	28	58,6/11,3	3-13
74	KV-10	2	60,5/4,9	6-7
75	KV-11	18	67,2/4,6	6-11
76	KT-11	16	69,5/5,1	8-15
89	KL-15	1	42,0/ -	6
90	KK-15	4	47,3/18,2	4-14
94	KK-16	76	44,6/9,4	3-17
101	KJ-10	7	45,6/6,9	3-7
102	KJ-11	2	53,5/4,9	7-8
116	KK-16	6	49,8/9,3	3-13



FIGUR 1 Islandsk skrabermodel anvendt under forsøgsfiskeriet.

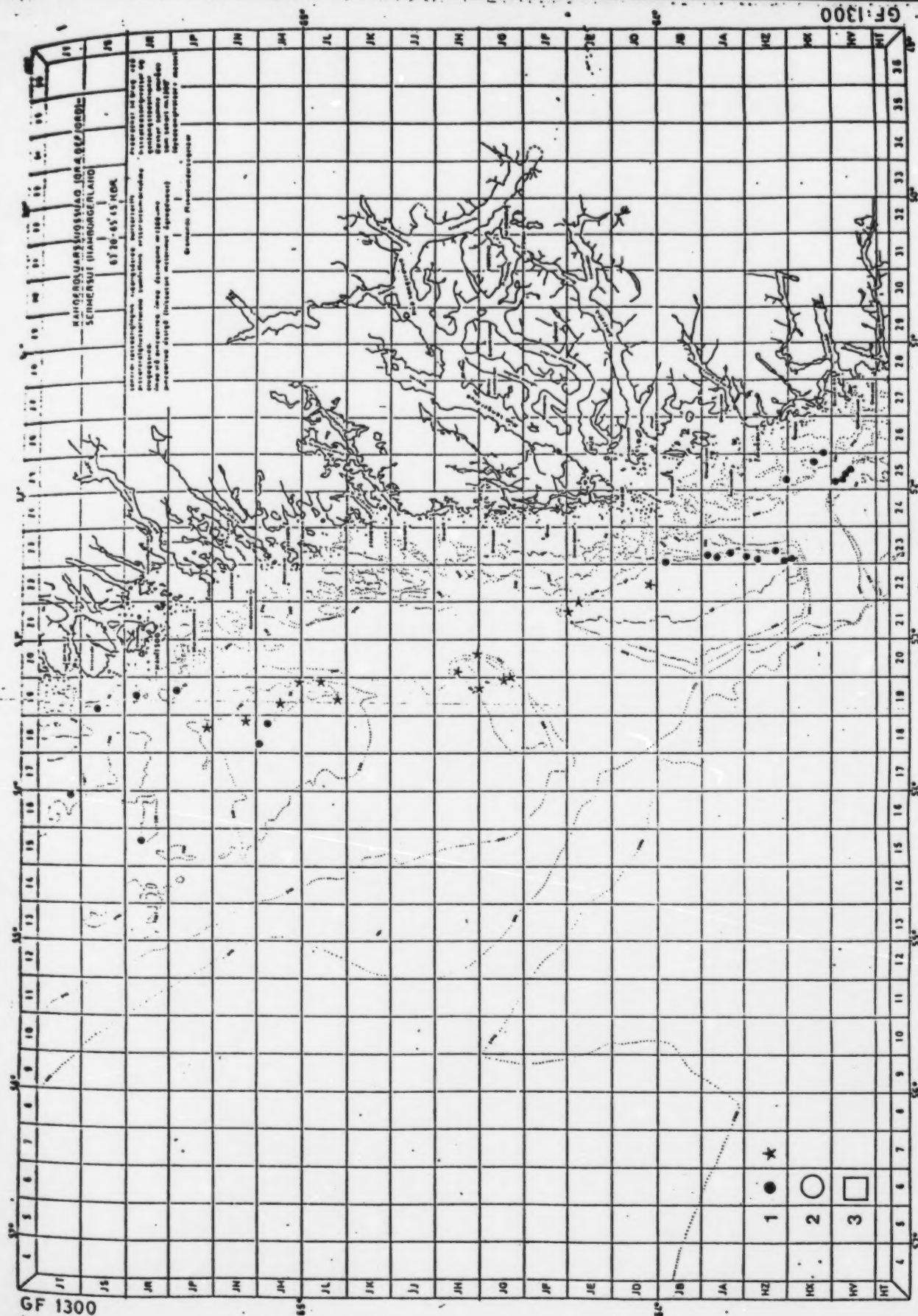
Fig. 1 Icelandic dredge model used for trial fishery



FIGUR 2 Målinger foretager på skallen.

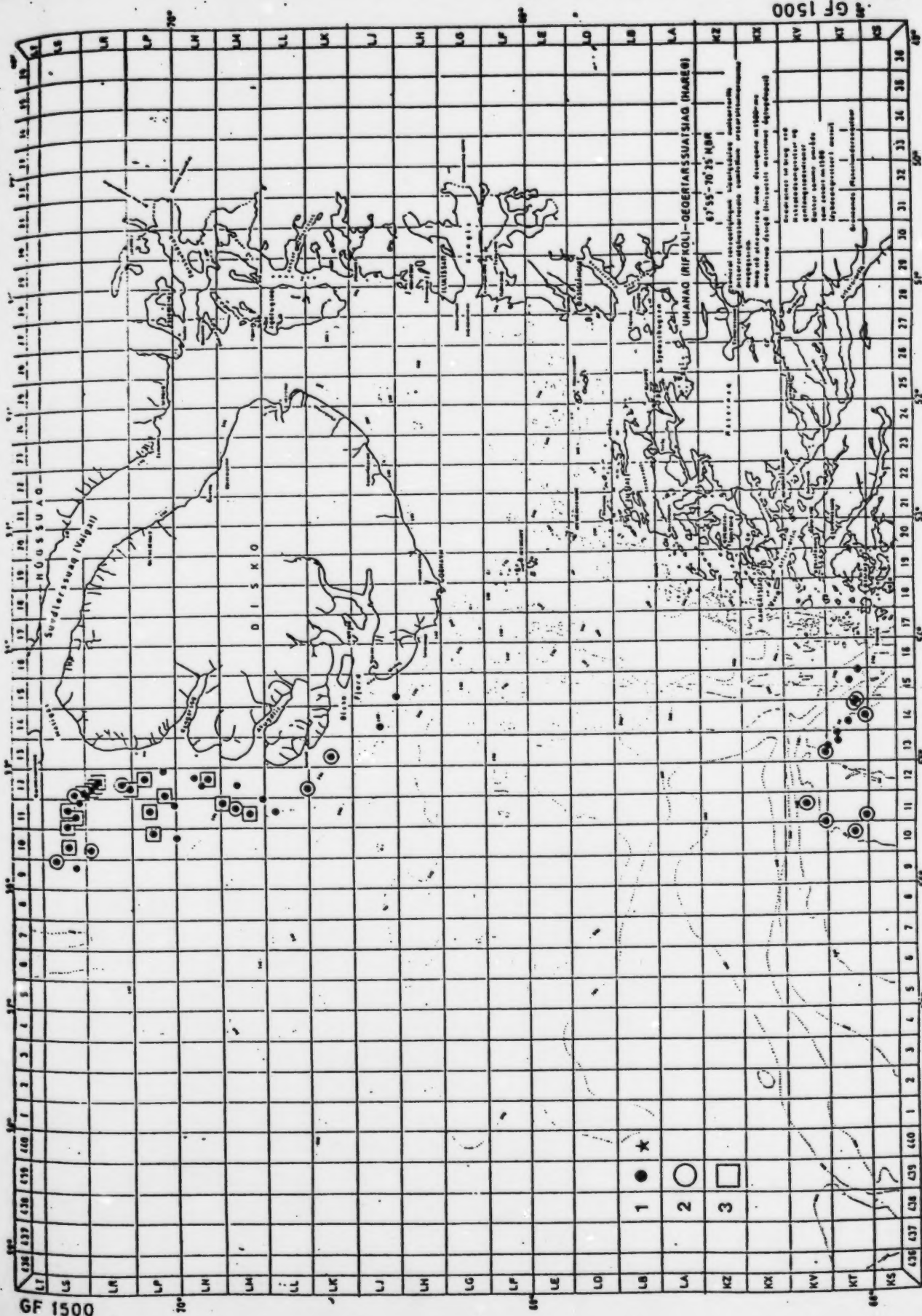
Fig. 2 Shell measurements

Fig. 3a 1) Dredging stations with no catch 2) Less than 50 live scallops 3) More than 50 or 50 live scallops.



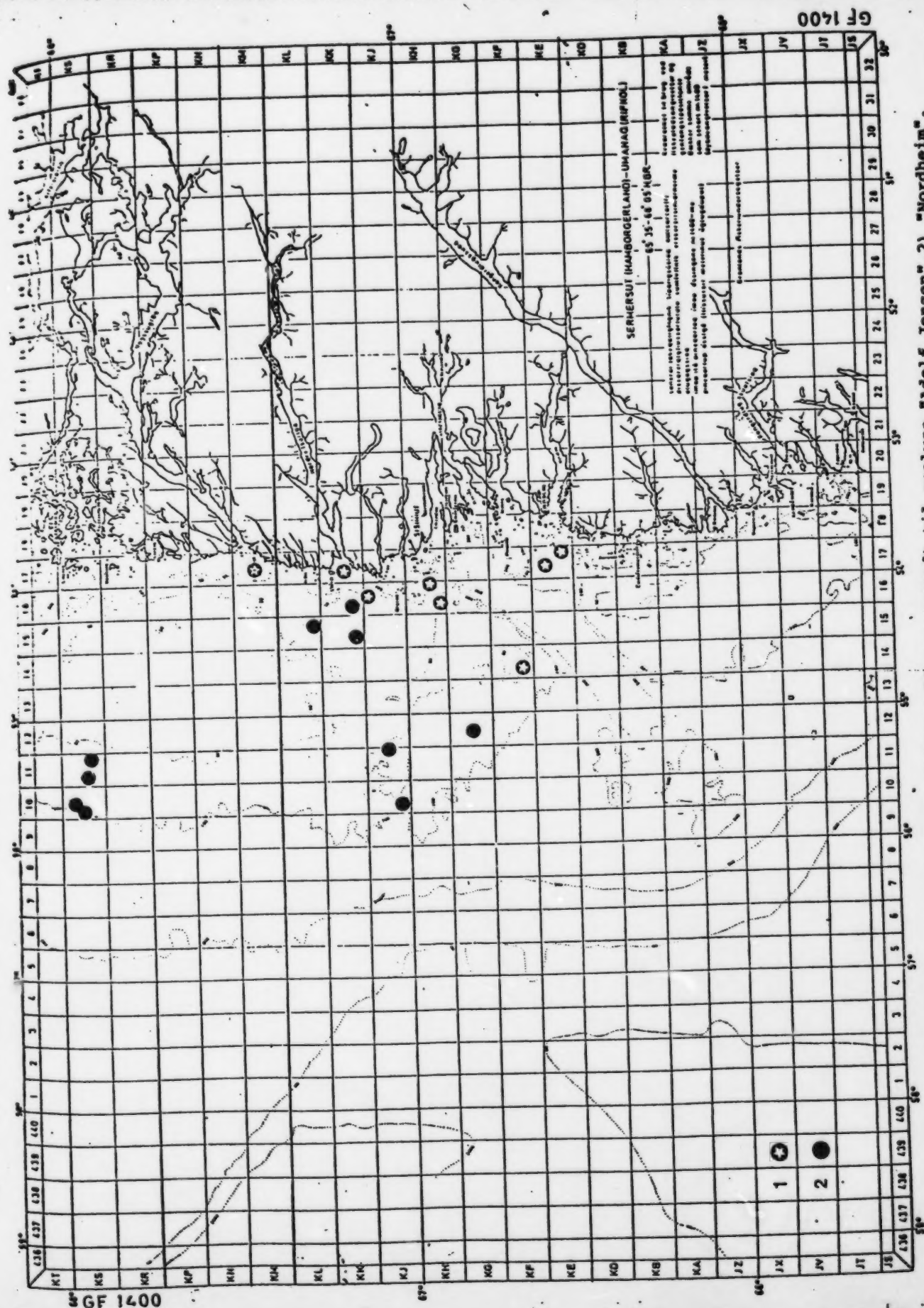
FIGUR 3a 1) Skrabe-stationer uden fangst. 2) Mindre end 50 levende muslinger. 3) Mere end eller liget 50.

Fig. 3c 1) Stations with no catch of live scallops 2) Fewer than 50 3) More than 50 or 50 live scallops.



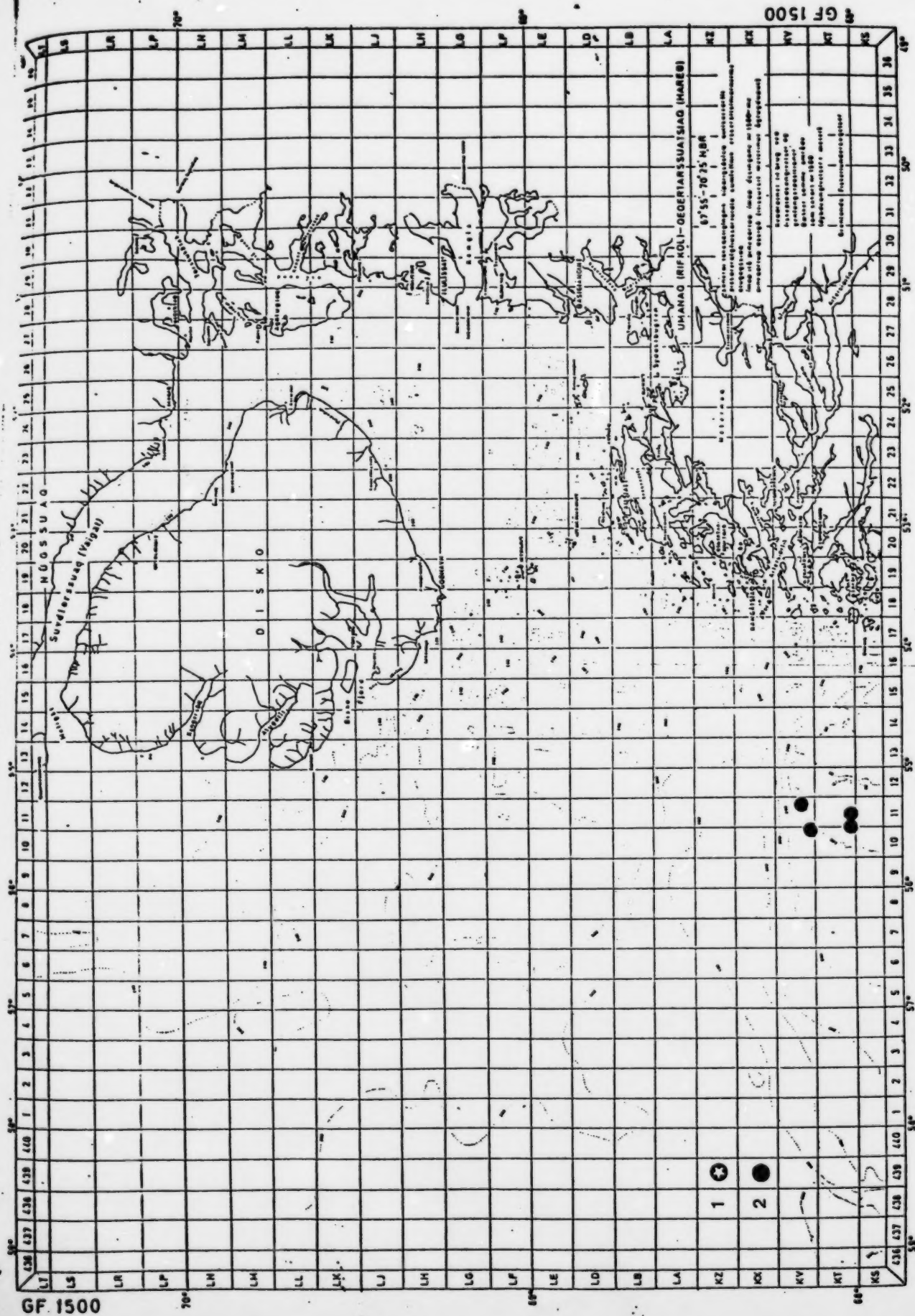
FIGUR 3c. 1) Skrabe-stationer uden fangst af levende kammuslinger. 2) Mindre end 50 3) Mere end eller liget 50.

Fig. 4a 1) Stations where scallops were taken for use in analyses. Adolf Jensen. 2) Nordheim.

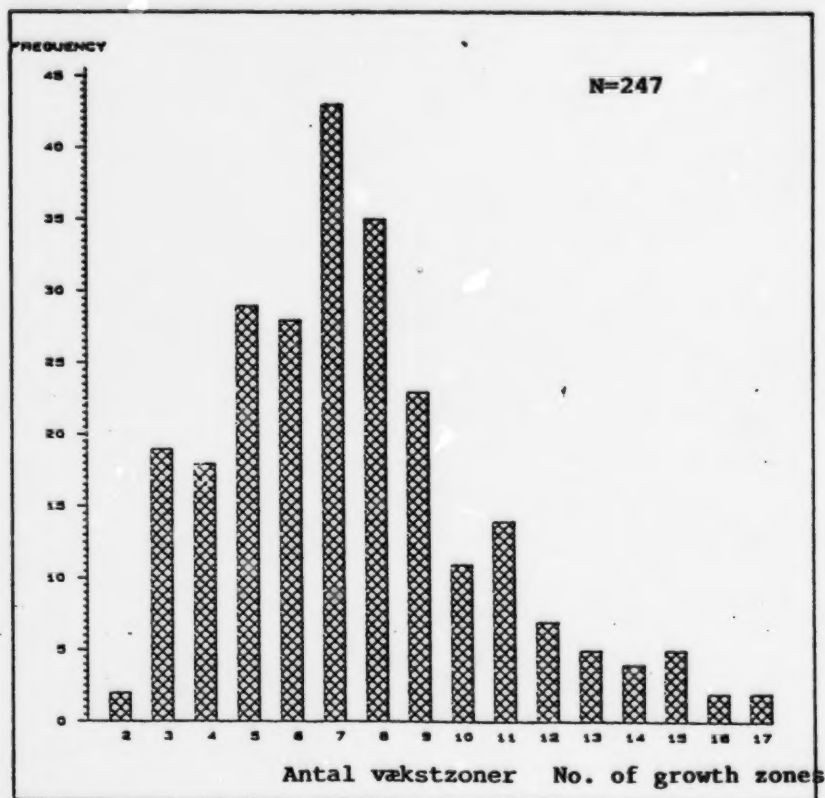


FIGUR 4a

Fig. 4b 1) Stations where scallops were taken for use in analyses. Adolf Jensen. 2) Nordheim.



FIGUR 4b 1) Skrabe-stationer med fangst af kammuslinger anvendt til analyse. "Adolf Jensen". 2) "Nordheim".



FIGUR 5 Aldersfordeling af de analyserede muslinger.

Fig. 5 Age distribution of analyzed scallops.

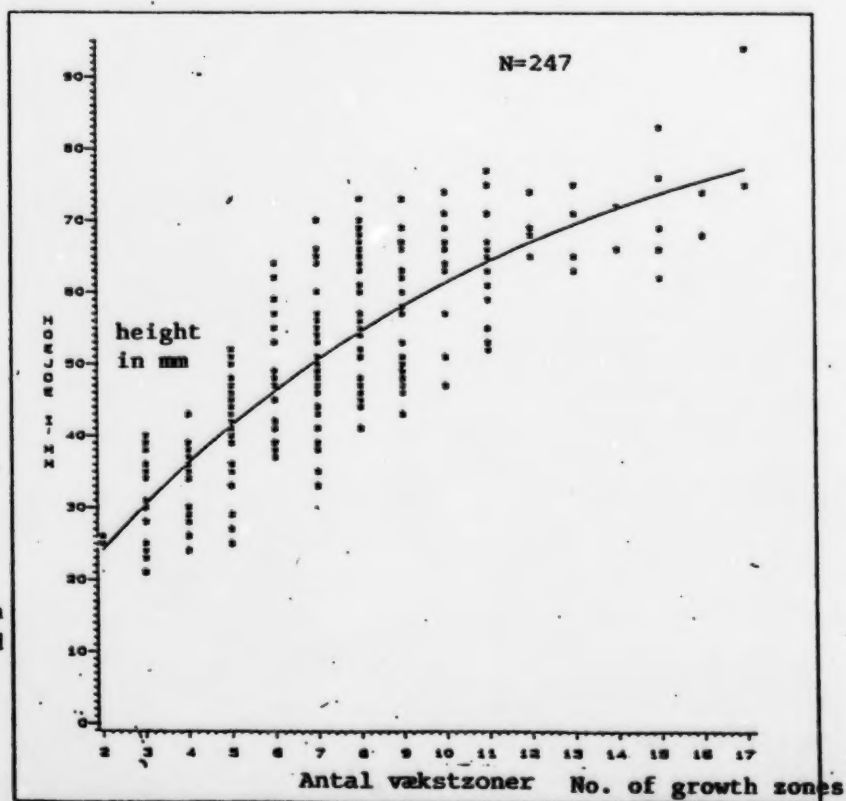
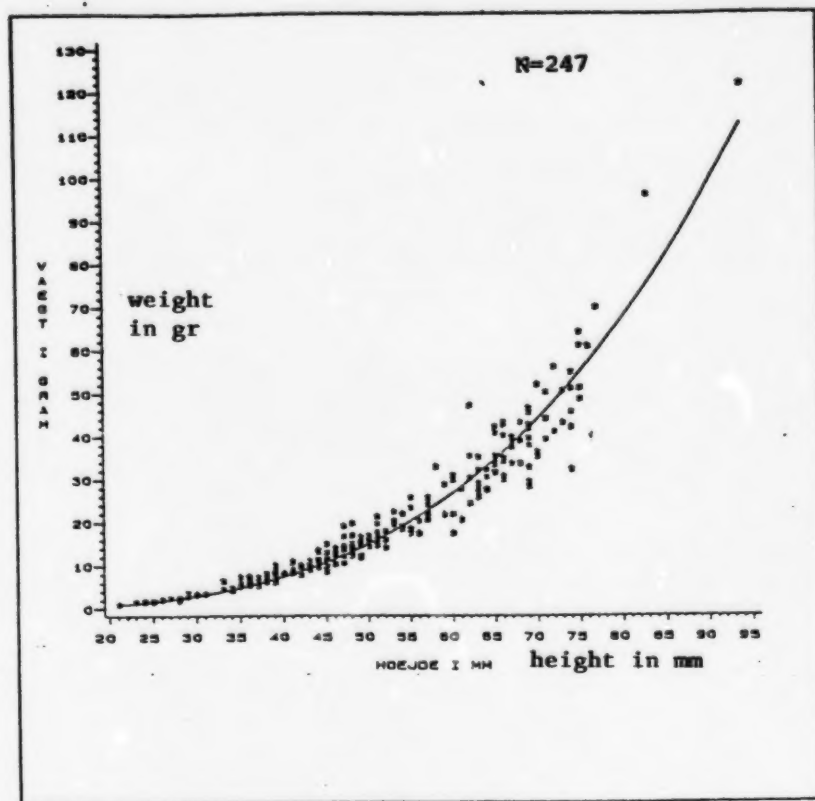


Fig. 6 Relation between no. of growth zones and shell height



FIGUR 7 Vægt som funktion af højde.

Fig. 7 Weight as function of height.

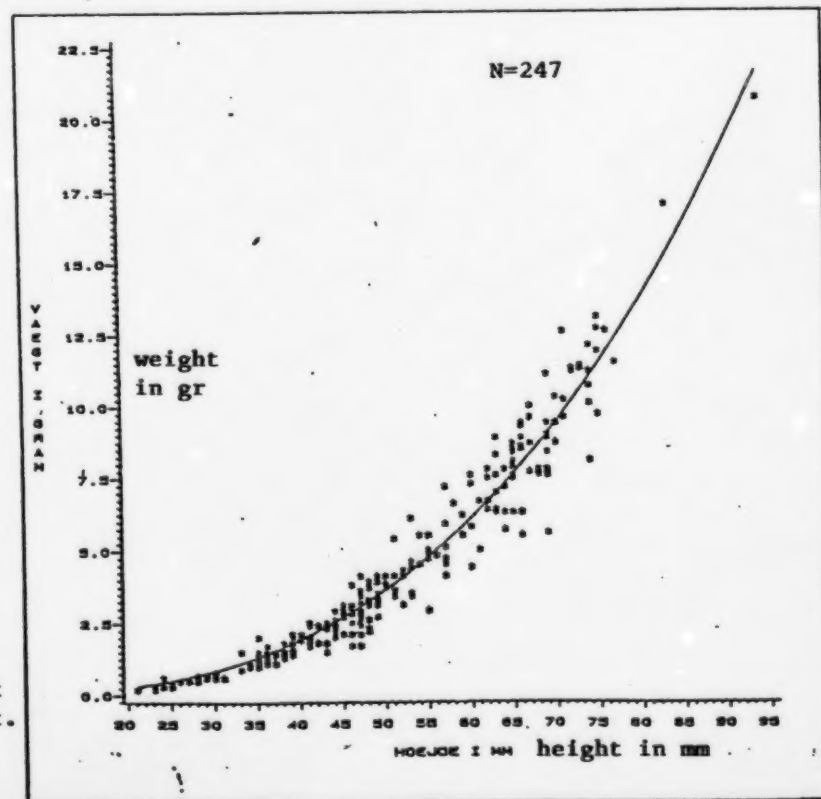
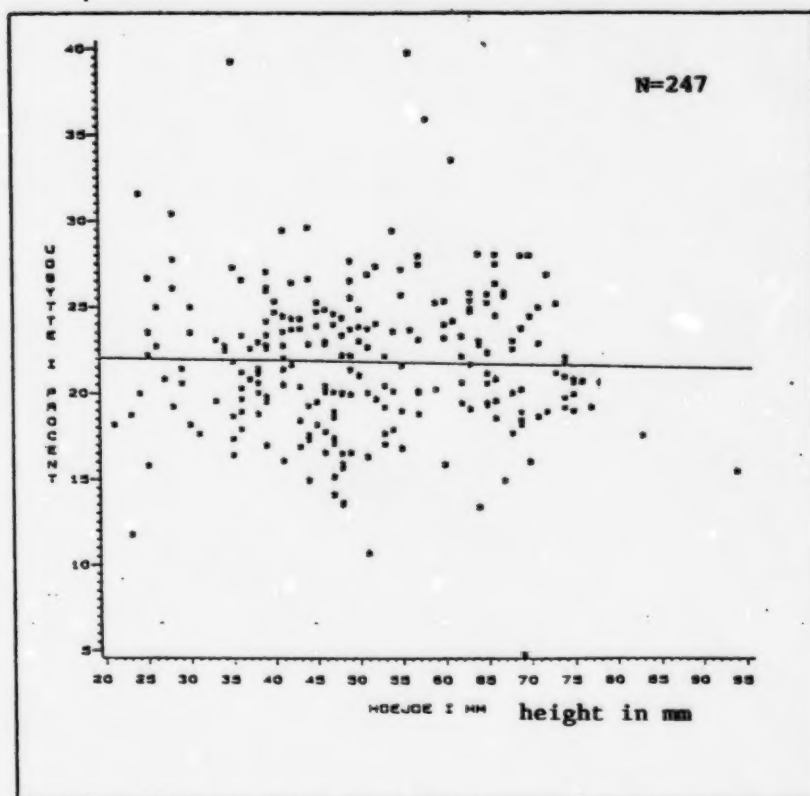


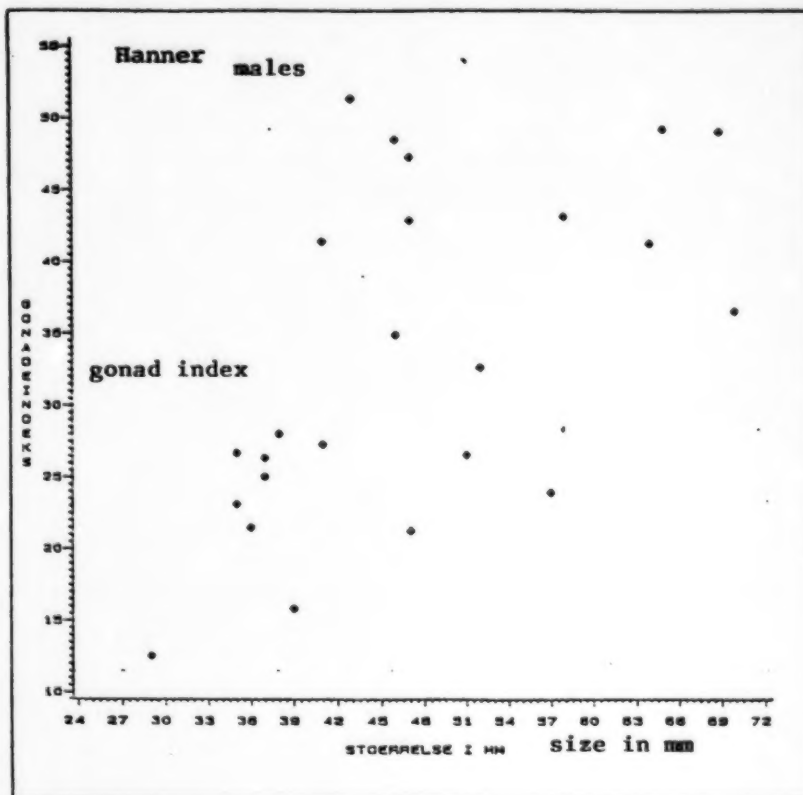
Fig. 8 Muscle weight as function of height.

yield in %



FIGUR 9 Muskeludbytte som funktion af højde.

Fig. 9 Muscle yield as function of height.



FIGUR 10a Gonadeindeks for han-muslinger fanget med "Adolf Jensen" 1. til 6. juni 1986.

Fig. 10a Gonad index for males taken with ADOLF JENSEN June 1 - 6, 1986.

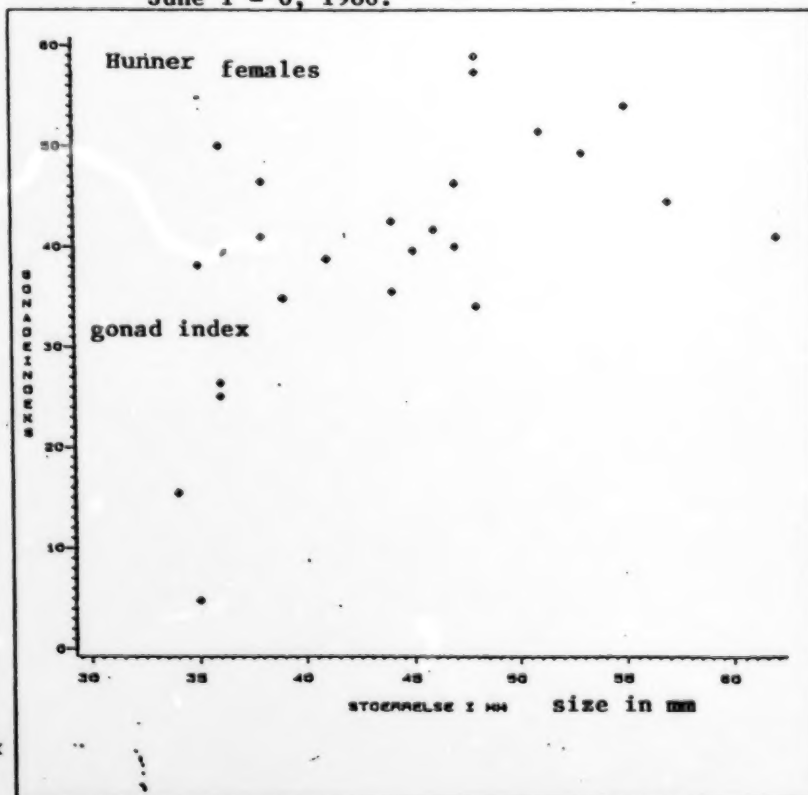
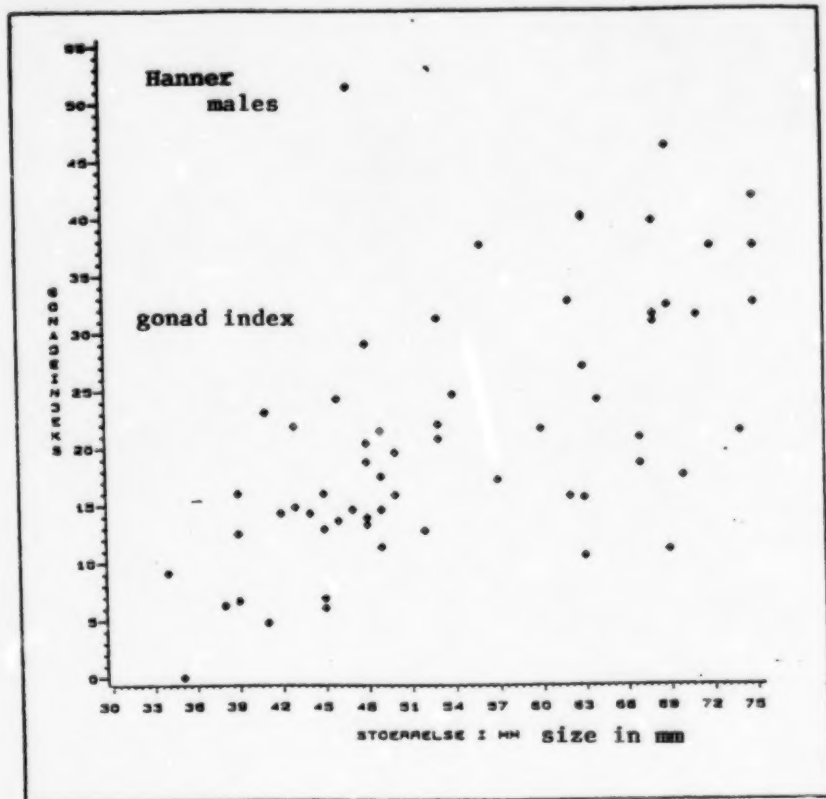


Fig. 10b Gonad index for females taken with ADOLF JENSEN

June 1 - 6, 1986

FIGUR 10b Gonadeindeks for hun-muslinger fanget med "Adolf Jensen"



FIGUR 11a Gonadeindeks for han-muslinger fanget med "Nordheim".
24. til 28. juli 1986.

Fig. 11a Gonad index for males taken with NORDHEIM July 24-28, 1986.

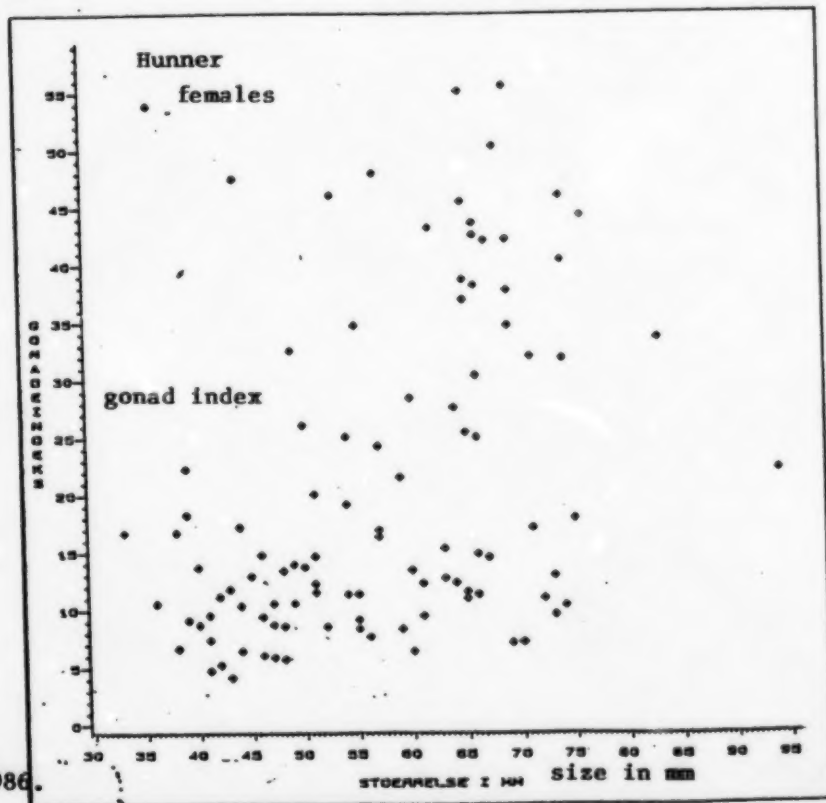


Fig. 11b Gonad index
for females taken with
NORDHEIM July 24-28, 1986.

FIGUR 11b Gonadeindeks for hun-muslinger fanget med "Nordheim".
24. til 28. juli 1986.

UDENSKÆRS KAMMUSLINGEUNDERSØGELSER 1986
ICELANDIC SCALLOP STUDIES IN OPEN WATERS 1986

Stationsoversigt med angivelse af træk nr, banke, kast position, GFM-kode for stationer med fangst af levende muslinger, fiskedybde, fangst af levende muslinger og temperatur ved bunden.

List of stations, indicating drag No., bank, cast position, and GFM Code for stations taking live scallops, dredging depth, catches of live scallops, and temperature at sea floor.

Udensskærsundersøgelser med M/S "Adolf Jensen" i perioden 1. juni - 7. juni 1986.

Studies in open waters with M/S ADOLF JENSEN in the period June 1 - 7, 1986.

træk nr drag No.	banke Bank	position Position	træktid (min)	GFM- kode	dybde (m)	fangst Catch (antal/kg)	temp. (°C)
			drag duration		depth	(No./kg)	
1	Fylla	64 07'2 N 52 42'3 W			35-36	0	
2	-	64 12'9 N 52 44'7 W	17		85-56	0	
3	-	64 14'4 N 52 51'6 W	17		71-60	0	
4	Tovqussaq	64 24'9 N 53 14'6 W	16		75-64	0	
5	-	64 26'2 N 53 16'1 W	13		48-47	0	
6	-	64 30'0 N 53 18'5 W	15		62-67	0	
7	-	64 30'1 N 53 06'9 W	16		66-63	0	
8	-	64 33'8 N 53 09'5 W	22		84-53	0	
9	Sukkertop	64 54'1 N 53 25'6 W	15		75-64	0	
10	-	64 56'6 N 53 15'5 W	16		83-46	0	
11	-	65 00'1 N 53 16'5 W	15		82-58	0	
12	-	65 03'6 N 53 28'0 W	16		57-67	0	
13	-	65 09'2 N 53 31'1 W	18		62-67	0	
14	-	65 16'1 N 53 35'2 W	19		86-81	0	
15	Ll. Helle- fiskebanke	66 06'6 N 53 49'1 W	15	JZ-17	50-50	1 stk. quantity : 1 (små) (small)	
16	-	66 10'8 N 53 56'3 W	9	KA-17	67-64	1 stk 1.27 (små)	
17	-	66 08'2 N 54 04'1 W	16		54-65	0 1.05	

northern slope of Hbg Deep	18	-	66 13'1 N 54 03'5 W	16		53-56	0	0.90	
	19	-	66 18'2 N 54 02'8 W	15		49-53	0	1.09	
	20	-	66 18'0 N 54 12'3 W	15		53-53	0		
	21	-	66 18'1 N 54 39'1 W	16		102-93	0	0.86	
	22	-	66 24'8 N 54 24'8 W	16		84-54	0	0.75	
	23	-	66 27'0 N 53 58'2 W	16		46-108	0	1.11	
	24	-	66 23'5 N 54 07'6 W	16		35-45	0	0.91	
	25	-	66 24'8 N 54 17'7 W	17	KD-15	64-63	2 stk. (små)	0.75	
	26	-	66 27'5 N 54 18'6 W	16	KD-15	127-75	1 stk. (små)	1.20	
	27	-	66 28'0 N 54 15'4 W	16		63-58	0	0.56	
southern	28	-	66 32'2 N 53 48'8 W	4	KE-17	100-50	7 stk. (små)	1.32	stk. = quantity smi = small
	29	-	66 36'4 N 53 53'7 W	9	KE-17	80-34	6 stk. (små)	1.21	
	30	Nordlig skrant af	66 42'6 N 54 16'0 W	15		100-37	0	0.53	
	31	Hbg-dyb	66 40'1 N 54 21'2 W	17		84-48	0	0.97	
	32	-	66 39'6 N 54 39'8 W	15	KF-14	53-54	2 stk. (små)	0.80	
	33	-	66 41'2 N 54 42'5 W	17		61-54	0	0.37	
	34	-	66 47'4 N 54 46'7 W	15		55-57	0	0.34	
	35	Sydlig St.Hellefisk	67 00'8 N 54 45'7 W	16		53-55	0	0.50	
	36	-	66 53'0 N 54 45'4 W	16		45-43	0	0.28	
	37	-	66 55'2 N 54 35'3 W	15		56-59	0	0.01	
	38	-	66 50'2 N 54 30'4 W	15		33-36	0	0.21	
	39	-	66 47'7 N 54 15'7 W	15		35-38	0	0.29	

40	-	66 50 ⁶ N	15		64-66	0	0.09	
		54 10 ⁷ W						
41	-	66 52 ⁷ N	15		50-61	0	0.06	
		54 13 ³ W						
42	-	66 56 ² N	15	KH-16	89-68	2 stk.	1.32	
		54 00 ⁴ W				(små)		
43	-	66 53 ⁴ N	16	KH-16	69-36	2 stk.	1.27	
		54 07 ⁴ W				(små)		
44	-	67 06 ² N	13	KJ-17	127-72	33 stk.	0.16	stk. = quantity
		54 06 ⁸ W				(små)		små = small
45	-	67 12 ⁴ N	15		71-55	0	0.37	
		54 06 ⁰ W						
46	Sydbay	67 11 ⁵ N	15	KK-17	66-75	9 stk.	0.51	
		53 53 ⁵ W				(små)		
47	-	67 14 ² N	15		75-46	0	0.61	
		54 05 ³ W						
48	St.Hellefisk	67 18 ⁰ N	18		42-37	0	0.71	
		54 05 ⁰ W						
49	-	67 22 ⁴ N	15		28-23	0	-0.01	
		54 08 ⁷ W						
50	-	67 26 ¹ N	16	KM-17	84-70	1 stk.	0.15	
		53 54 ⁶ W				(små)		

Studies in open waters with M/S NORDHEIM in the period July 12 - August 10, 1986.

Undersøgelser med M/S "NORDHEIM" i perioden 12. juli - 10. august 1986.

træk nr Drag No.	banke Bank	position Position	træktid (min) Drag duration	GFM- kode	dybde (m) Depth	fangst (antal/kg) Catch (No./kg)
1	Fylla	63 28°7 N 51 56°3 W	10		-	0
2	-	63 29°3 N 51 56°0 W	30		137.4	0
3	-	63 27°9 N 51 53°0 W	25		58.3	0
4	-	63 26°6 N 51 51°5 W	35		43.3	0
5	-	63 37°5 N 51 55°5 W	10		71.5	0
6	-	63 32°0 N 51 48°5 W	5		56.5	0
7	-	63 31°2 N 51 45°0 W	10		75.3	0
8	-	63 37°4 N 52 28°4 W	20		71.5	0
9	-	63 38°3 N 52 29°0 W	42		49.7	0
10	-	63 39°0 N 52 24°5 W	45		107.8	0
11	-	63 42°5 N 52 28°1 W	36		45.2	0
12	-	63 44°8 N 52 26°9 W	20		80.9	0
13	-	63 47°2 N 52 26°0 W	48		103.5	0
14	-	63 50°4 N 52 27°0 W	40		103.5	0
15	-	63 51°8 N 52 26°7 W	27		107.3	0
16	-	63 58°0 N 52 29°8 W	33		72.7	0
17	SUKKERTOP BANKE	52 57°85 N 53 40°00 W	32		97.9-111.1	0
18	-	65 13°30 N 53 38°48 W	55		99.8-94.2	0
19	-	66 27°00 N 54 23°00 W	30		79.1-57.2	0

20	LILLE	66 26'30 N	17		67.8-76.4	0
	HELLEFISKE-	54 19'15 W				
21	BANKE	66 25 00 N	55		76.6-71.9	0
		54 26'30 W				
22	-	66 22 20 N	45		96.0-76.6	0
		54 34'00 W				
23	-	66 20'20 N	40		67.2-71.6	0
		54 34'50 W				
24	-	66 22'00 N	23		63.3-57.2	0
		54 18'30 W				
25	-	66 28'30 N	30		113.0-95.5	0
		54 15'30 W				
26	-	66 28'36 N	20		102.2-71.6	0
		54 12'12 W				
27	STORE	66 40'45 N	45		122.4-127.9	0
	HELLEFISKE-	54 22'10 W				
28	BANKE	66 38'40 N	45		111.1	0
		54 25'20 W				
29	-	66 39'20 N	50		62.1-53.7	0
		54 32'20 W				
30	-	66 41'30 N	25		55.7-56.5	0
		54 34'50 W				
31	-	66 35'18 N	37		104.3-105.4	0
		54 32'00 W				
32	-	66 37'00 N	38	KE-13	92.2-103.6	2 stk. (quantity)
		54 59'00 W				(små) (small)
33	-	66 40'00 N	30		59.9-74.4	0
		54 43'00 W				
34	-	66 37'00 N	55		109.2-103.4	0
		54 55'30 W				
35	-	66 42'42 N	20		83.4-91.5	0
		54 57'30 W				
36	LILLE	66 19'10 N	10		61.2-62.3	0
	HELLEFISKE-	54 24'00 W				
37	BANKE	66 18'20 N	35		79.1-77.2	0
		54 32'50 W				
38	-	66 16'18 N	20		76.1-79.3	0
		54 36'00 W				
39	-	66 16'00 N	20		56.5-60.4	0
		54 06'00 W				
40	-	66 18'54 N	30		50.8-66.7	0
		54 00'00 W				
41	-	66 13'30 N	22		69.3-67.2	0
		53 59'12 W				

42	-	66 10'30 N	15		84.7-88.5	0	stk. = quantity
		53 57'00 W					små = small
43	-	66 09'40 N	15		88.5-71.6	0	
		53 56'20 W					
44	-	66 03'15 N	15		80.0-67.8	0	
		53 53'00 W					
45	-	66 01'30 N	8		86.6-84.7	0	
		53 51'50 W					
46	STORE	68 03'24 N	20		36.0-33.3	0	
	HELLEFISKE-	54 42'12 W					
47	BRANKE	68 04'48 N	20		25.4-32.6	0	
		54 47'00 W					
48		48 07'20 N	35		57.4-54.0	0	
		54 58'30 W					
49	-	68 07'45 N	25	KV-13	41.4-38.0	8 stk.	
		54 53'50 W				(små)	
50	-	68 04'20 N	21		33.1-37.7	0	
		54 51'40 W					
51	-	68 00'10 N	20		36.3-50.7	0	
		54 41'00 W					
52	-	68 02'00 N	20		50.3-56.5	0	
		54 33'00 W					
53	-	68 02'54 N	24	KT-14	73.2-62.1	2 stk.	
		54 30'54 W				(små)	
54	-	68 02'00 N	50		116.7-128.0	0	
		54 23'15 W					
55	-	68 00'40 N	45	KT-15	109.2-90.8	10.0	
		54 20'00 W					
56	-	67 58'50 N	35		52.7-49.0	0	
		54 23'10 W					
57	-	68 00'40 N	27	KT-15	112.6-96.0	17 stk.	
		54 19'00 W					
58	-	67 58'18 N	32	KS-16	82.9-81.0	10 stk.	
		54 10'00 W					
59	-	67 59'12 N	35	KS-16	93.8-95.8	20 stk.	
		54 08'00 W				(små)	
60	-	67 58'12 N	35	KS-16	103.0-92.1	50 stk.	
		54 04'00 W				(små)	
61	-	67 55'10 N	45	KS-16	85.5-89.4	20 stk.	
		54 13'05 W				(små)	
62	-	67 50'25 N	35	KR-16	90.8-111.1	10 stk.	
		54 08'30 W				(små)	
63	-	67 52'40 N	45		94.5-98.1	0	
		54 06'45 W					

stk. = quantity

små = small

64	-	67 52°24 N	30		63.3-71.4	0
		54 13°24 W				
65	-	67 53°00 N	30		37.7-37.7	0
		54 25°00 W				
66	-	67 55°20 N	35		51.8-48.2	0
		55 03°30 W				
67	-	67 55°00 N	35	KS-12	47.6-45.2	4 stk.
		55 11°20 W				(små)
68	-	67 53°20 N	30		46.3-51.0	0
		55 13°10 W				
69	-	67 54°10 N	30	KS-11	54.8-62.5	2 stk.
		55 20°42 W				(små)
70	-	67 54°27 N	30	KS-11	66.7-74.6	13 stk.
		55 27°24 W				(små)
71	-	67 57°00 N	30	KS-10	82.7-99.6	4 stk.
		55 34°00 W				(små)
72	-	67 55°15 N	35	KS-10	74.0-80.0	8 stk.
		55 38°50 W				(små)
73	-	68 01°40 N	40	KT-10	84.7-76.1	28 stk.
		55 35°30 W				(små)
74	-	68 07°50 N	35	KV-10	75.3-74.0	2 stk.
		55 30°20 W				(små)
75	-	68 08°58 N	42	KV-11	56.7-57.2	18 stk.
		55 23°20 W				(små)
76	-	68 01°20 N	40	KT-11	73.2-79.3	16 stk.
		55 24°00 W				(små)
77	-	67 57°00 N	30		91.5-94.2	0
		55 41°00 W				
78	-	67 50°30 N	40		94.2-100.2	0
		55 46°00 W				
79	-	67 50°00 N	35		112.2-98.1	0
		55 49°00 W				
80	-	67 49°15 N	25		96.8-89.4	0
		55 48°30 W				
81	-	67 47°45 N	30	KR-10	98.8-114.9	5 stk.
		55 44°00 W				(små)
82	-	67 47°42 N	35		87.3-85.5	0
		55 44°00 W				
83	-	67 41°42 N	30		80.0-81.3	0
		55 41°00 W				
84	-	67 40°24 N	15		109.6-22.6	0
		54 02°48 W				
85	-	67 24°18 N	-		57.2-77.2	0
		54 23°00 W				

stk. = quantity

små = small

86	-	67 20°50 N	40		59.9-43.3	0
		54 28°45 W				
87	-	67 21°00 N	28		53.7-45.2	0
		54 21°30 W				
88	-	67 18°30 N	20		54.2-41.4	0
		54 19°20 W				
89	-	67 15°54 N	20	KL-15	80.8-78.0	1 stk.
		54 16°30 W				(små)
90	-	67 10°00 N	30	KK-15	74.6-82.1	4 stk.
		54 27°00 W				(små)
91	-	67 15°12 N	20		39.7-35.5	0
		54 12°18 W				
92	-	67 15°00 N	35		51.0-48.4	0
		54 08°15 W				
93	-	67 12°45 N	45		47.1-61.2	0
		54 08°00 W				
94	-	67 10°20 N	30	KK-16	65.9-71.2	76 stk.
		54 11°45 W				(små)
95	-	67 15°30 N	20		67.2-68.5	0
		54 32°30 W				
96	-	67 12°00 N	20		61.2-55.2	0
		54 50°00 W				
97	-	67 18°30 N	30		79.3-75.3	0
		54 32°00 W				
98	-	67 16°15 N	35		88.7-91.5	0
		54 39°00 W				
99	-	67 11°45 N	35		104.3-98.1	0
		54 43°50 W				
100	-	67 08°00 N	35		92.1-94.2	0
		54 49°45 W				
101	-	67 01°00 N	30	KJ-10	100.9-101.5	7 stk.
		55 44°00 W				(små)
102	-	67 04°00 N	30	KJ-11	106.2-101.5	2 stk.
		55 16°00 W				(små)
103	-	67 03°10 N	35		64.6-70.6	0
		55 03°34 W				
104	-	67 02°15 N	30		47.8-74.1	0
		54 50°45 W				
105	-	67 03°40 N	35		50.8-47.1	0
		54 54°50 W				
106	-	66 59°10 N	30		63.3-65.9	0
		54 41°00 W				
107	-	66 59°50 N	24		93.4-76.1	0
		54 19°30 W				

						stk. = quantity små = small
108	-	66 56'24 N	20		51.8-56.5	0
		54 15'30 W				
109	-	66 50'00 N	20		68.5-89.4	0
		54 11'36 W				
110	-	66 48'00 N	30		53.9-58.6	0
		54 36'15 W				
111	-	66 48'15 N	35		59.1-66.7	0
		54 46'30 W				
112	-	66 48'50 N	40		57.2-63.3	0
		54 42'00 W				
113	-	66 45'30 N	20		49.7-58.4	0
		54 46'00 W				
114	-	66 46'12 N	30		63.3-65.9	0
		54 55'00 W				
115	-	66 49'00 N	20		77.4-76.1	0
		55 04'00 W				
116	-	66 50'00 N	20	KG-12	77.4-84.7	6 stk. (små)
		55 13'48 W				
117	-	66 53'30 N	40		88.0-84.0	0
		55 05'45 W				
118	LILLE	65 56'50 N	22		77.6-71.9	0
	HELLEFISKE-	54 01'00 W				
119	BANKE	65 59'00 N	20	JX-18	69.3-76.1	1 stk. (små)
		53 42'10 W				
120	-	66 25'50 N	30		105.4-104.9	0
		54 05'15 W				
121	-	66 29'15 N	30		143.1-97.9	0
		54 05'10 W				
122	-	66 28'45 N	25		92.3-72.7	0
		54 11'50 W				
123	-	66 27'12 N	20		65.9-47.8	0
		54 10'00 W				
124	-	66 25'12 N	20		100.9-84.7	0
		54 06'00 W				
125	-	66 23'00 N	20		79.1-74.9	0
		54 04'18 W				
126	-	66 23'10 N	20		45.0-39.0	0
		54 10'30 W				
127	-	66 24'30 N	15		62.5-57.1	0
		54 18'15 W				
128	-	66 08'42 N	20		74.6-75.3	0
		54 18'00 W				
129	-	66 10'48 N	3		62.5-62.1	0
		54 13'30 W				

						stk. = quantity
						små = small
130	-	66 03'30 N	30		101.7-104.9	0
		54 32'45 W				
131	-	66 09'50 N	35		108.3-107.5	0
		54 39'15 W				
132	-	66 00'00 N	17		81.3-79.3	0
		53 50'30 W				
133	-	65 58'30 N	60		100.9-78.0	0
		53 49'00 W				
134	-	65 54'30 N	15		82.1-76.6	0
		53 51'00 W				
135	-	65 53'12 N	35		91.5-92.2	0
		53 48'30 W				
136	-	65 50'32 N	30		122.4-111.1	0
		53 42'45 W				
137	-	65 51'10 N	30		122.4-123.1	0
		53 38'45 W				
138	-	65 47'35 N	30		96.2-99.6	0
		53 44'00 W				
139	-	65 46'48 N	20		93.3-92.8	0
		53 45'00 W				
140	-	65 45'10 N	30		87.2-88.5	0
		53 47'00 W				
141	-	65 44'00 N	15		73.2-72.9	0
		53 51'00 W				
142	-	65 43'40 N	40		80.0-101.7	0
		54 01'00 W				
143	-	65 43'10 N	20		110.9-109.2	0
		54 09'00 W				
144	-	65 39'20 N	30		102.2-77.2	0
		54 02'00 W				
145	-	65 35'48 N	25		110.3-127.9	0
		53 28'24 W				
146	-	65 28'24 N	30		113.0-100.6	0
		53 24'10 W				
147	-	65 22'30 N	25		94.9-85.1	0
		53 21'30 W				
148	DISKO	69 34'18 N	20	LK-13	86.1-78.0	32 stk.
	OMRÅDET	54 55'00 W				(små)
149	-	69 37'00 N	30	LK-12	90.2-92.8	8 stk.
		55 10'00 W				(små)
150	-	69 40'30 N	35		104.9-100.9	0
		55 22'00 W				
151	-	69 42'50 N	35		106.2-110.3	0
		55 23'50 W				

Disko
area

stk. = quantity
små = small
store = large

152	-	69 46'15 N	35		89.6-92.3	0
		55 17'00 W				
153	-	68 48'24 N	30	LM-11	91.5-90.2	62 stk.
		55 23'10 W				(små)
154	-	69 50'24 N	30	LM-11	82.1-76.6	8 stk.
		55 21'00 W				(små)
155	-	69 52'00 N	25	LM-11	76.6-71.4	350 stk
		55 21'12 W				(små)
156	-	69 55'00 N	30		106.2-85.3	0
		55 11'00 W				
157	-	69 56'40 N	25		102.8-92.8	0
		55 04'10 W				
158	-	69 54 55 N	25	LN-12	75.3-82.1	350 stk
		55 05'20 W				(små)
159	-	70 17'00 N	20	LS-11	59.1-63.3	338 stk
		55 22'54 W				(små+store)
160	-	70 18'45 N	15	LS-11	68.7-66.5	300 stk
		55 22'15 W				(små+store)
161	-	70 16'40 N	13		41.4-36.9	0
		55 17'00 W				
162	-	70 15'40 N	20	LS-12	40.5-47.6	60 stk.
		55 14'00 W				(små)
163	-	70 15'00 N	23		36.9-50.8	0
		55 13'00 W				
164	-	70 13'30 N	15	LR-12	104.9-78.0	150.0 kg
		55 08'30 W				(små+store)
165	-	70 13'30 N	30	LR-12	116.7-67.2	70.0 kg
		55 09'00 W				(store)
166	-	70 17'42 N	45	LS-12	116.7-130.5	30 stk.
		55 09'00 W				(små)
167	-	70 18'12 N	25	LS-10	79.3-84.7	150.0 kg
		55 31'00 W				(store)
168	-	70 18'40 N	25	LS-10	82.1-87.4	20.0 kg
		55 37'00 W				(store)
169	-	70 20'00 N	30	LS-10	91.5-94.2	10 stk.
		55 44'50 W				
170	-	70 17'40 N	40		91.5-99.6	0
		55 48'50 W				
171	-	70 14'50 N	30	LR-10	99.6-95.5	20 stk.
		55 42'00 W				
172	-	70 13'54 N	30	LR-12	92.8-88.7	100.0 kg
		55 08'10 W				(små+store)
173	-	70 09'50 N	30	LR-12	103.6-95.5	15 stk.
		55 08'00 W				(små)

174	-	70 08'50 N	20	LR-12	88.7-90.2	350 stk
		55 11'15 W				(små)
175	-	70 06'20 N	25	LP-12	83.8-76.6	500 stk
		55 04'15 W				(små)
176	-	70 03'20 N	45	LP-12	81.0-96.8	40 stk
		55 02'30 W				(små)
177	-	70 05'00 N	30	LP-11	69.9-69.9	10.0 kg
		55 18'30 W				(små)
178	-	70 04'42 N	30	LP-10	82.1-83.4	100 stk
		55 32'30 W				(små)
179	-	70 01'00 N	30		106.8-106.2	0
		55 34'00 W				
180	-	70 01'20 N	30		99.6-111.1	0
		55 19'15 W				
181	-	70 03'00 N	40	LP-12	74.0-75.3	10.0
		55 15'00 W				(små)
182	-	69 56'40 N	25		125.0-134.4	0
		55 07'30 W				
183	-	69 26'00 N	10		131.8-67.2	0
		54 41'00 W				
184	-	69 23'00 N	30		102.2-91.5	0
		54 28'10 W				

stk. = quantity
små = small